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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/745,780	12/21/2000	Martin C. Roberts	303.451US6	3144
21186	7590	12/06/2001		
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402			EXAMINER	
			BEREZNY, NEAL	
			ART UNIT	PAPER NUMBER
			2823	
DATE MAILED: 12/06/2001				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/745,780	TANG ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Neal Berezny	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on 27 August 2001.

2a) This action is FINAL.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 38-79 is/are pending in the application.

4a) Of the above claim(s) 53, 60 and 61 is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 38-52, 54-59 and 62-79 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 21 December 2000 is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
     If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

1. Certified copies of the priority documents have been received.

2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3</u>	6) <input type="checkbox"/> Other: _____

**DETAILED ACTION**

***Acknowledgement***

1. Examiner acknowledges applicant election of the Group 2 invention, claims 38-52, without traverse, and the cancellation of the group 1 invention, claims 34-37, without prejudice.

***Information Disclosure Statement***

2. The information disclosure statement filed 12/21/00 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. The IDS references marked with “\*NF” on the IDS were not present either in the file, nor in the parent files and were not available to the examiner. The references marked “NF” will be considered when the parent files are available.

***Drawings***

3. The drawings are objected to because Fig.4A, el.45, should be directed to the poly 2 layer. Correction is required.

***Election/Restrictions***

4. Newly submitted claims 53 and 60-61 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claims 60-61 are drawn to a different intermediate species product than previously restricted and thereafter elected without traverse. The originally claimed intermediate product was

drawn to a generic intermediate product common to a number of different final products, such as capacitors and fuses, whereas the newly filed claims are drawn to an intermediate product species useful only to an FET final product. Claim 53 suffers from the same type of problem in that the intermediate product is drawn to a specific final product species, i.e. an interconnect structure. Each of these species are mutually exclusive in terms of these intermediate and final products.

5. Since applicant has received an action restricting the inventions as originally presented, and this invention has been elected without traverse, prosecution on the merits shall proceed on the elected invention. Accordingly, claims 53 and 60-61 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

***Double Patenting***

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 38-52, 54-59, and 62-79 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S.

Patent No. 5,923,584. Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious at the time of applicant's invention to one of ordinary skill in the art to employ the well known practice of employing resist to form a pattern and it would also be obvious at the time of applicant's invention to one of ordinary skill in the art to form a silicide composed of Ti, in which it is obvious at the time of applicant's invention to one of ordinary skill in the art that Ti silicide can be used as an etch stop material against a silicon etch. Further, it is well known in the art and would be obvious to employ an etch stop layer in an etch-back planarization process, as recited, as part of a conventional multilevel interconnect process to enable formation of interconnects and bond pads necessary to incorporate the disclosed device in an integrated circuit. It is well known to employ an etch stop over a structure that one would like to protect during an etching process so as not to overetch the structure, causing it damage. In addition, the use of photoresist is well known in the art as a means of patterning structures in the semiconductor industry and would be obvious to form the resist, as recited, as part of a conventional multilevel interconnect process to enable formation of interconnects and bond pads necessary to incorporate the disclosed device in an integrated circuit.

***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
9. Claims 44, 62-63, 47, and 68-69 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the

subject matter which applicant regards as the invention. Claims 44 and 47 recite the limitation "the field oxide and gate oxides" in the poly layer element. There is insufficient antecedent basis for this limitation in the claims.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 38-52, 54-59, and 62-79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nihira et al. (4,908,324). Nihira teaches forming first and second sections on a substrate, fig.8f, el.3 and 5, first and second Si plugs extending vertically, el.11, a field oxide in the second section, el.5, a first poly over the field oxide and portions over which the structure formed could be labeled, as recited in claim 40, for example, as consisting of "at least a portion of the second region", a second poly over the first poly and the first region, col.5, ln.61-67, forming no horizontal, but only vertical interfaces between the two poly structures, a gate oxide, el.6, patterning the plug region, col.5, ln.47-52, the second poly removed over the first poly, el.9 and 11, and doping the first and second poly structures, col.6, ln.4-6.

12. Nihira appears not to specify the use of resist over the poly plug, nor the use of As for doping the poly layers. Official notice is given that the use of photoresist is well known in the art as a means of patterning structures in the semiconductor industry and would be obvious to form the resist, as recited, as part of a conventional multilevel

interconnect process to enable formation of interconnects and bond pads necessary to incorporate the disclosed device in an integrated circuit. Official notice is also given that As is well known as a dopant and it would be obvious to switch the dopant types of the structure to provide greater process and device latitude. Further is would be obvious and is well known to use As as an N-type dopant.

13. Nihira appears not to employ the use of an etch stop over the first poly. Official notice is given that it is well known in the art and would be obvious to employ an etch stop layer in an etch-back planarization process, as recited, as part of a conventional multilevel interconnect process to enable formation of interconnects and bond pads necessary to incorporate the disclosed device in an integrated circuit. It is well known to employ an etch stop over a structure that one would like to protect during an etching process so as not to overetch the structure, causing it damage. Further, the use of Ti silicide as an etch stop material is also well known in the art and would be obvious to use in a conductive poly structure in order to both stop an etch and to further increase the conductivity of the structure.

## CONCLUSION

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Neal Berezny whose telephone number is (703) 305-1481. The examiner can normally be reached on Monday to Friday from 9:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached at (703) 308-4918. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
George Poulson  
Primary Examiner  
2823

  
11-28-01

Neal Berezny  
Patent Examiner  
Art Unit 2823